

## Claims

What I claim as my invention is:

1. A rotary kiln for pyro-processing organic and inorganic materials, comprising:  
a cylindrical, elongated steel shell having a feed end, an opposite discharge end, the feed end  
5 being more elevated than the discharge end, and defining an interior longitudinal heating  
chamber for pyro-processing materials; a driving mechanism to rotate the kiln around its  
longitudinal axis to maintain the material therein moving from the feed end to the discharge  
end; an insulating refractory lining contiguous to the cylindrical shell, comprised of a  
plurality of hollow refractory brick, in abutment with respect to one another, as means to  
10 contain heat; a work refractory lining, annularly contiguous to said insulating lining,  
comprised of a plurality of refractory brick members, in abutment with respect to one  
another, as means to contain heat and support the material under processing.
2. A rotary kiln construction as set forth in claim 1 wherein said insulating refractory lining is  
built with hollow bricks.
- 15 3. The kiln of claim 2 wherein the work lining is comprised of dense brick.
4. The kiln of claim 3 in which the insulating lining includes a plurality of bricks secured to  
the inner cylindrical surface of the shell in both axial and circumferential directions.
5. The kiln of claim 4 wherein the insulating hollow-bricks are composed of a refractory  
material.
- 20 6. The kiln of claim 5 where the hollow-bricks are tapered or straight.
8. The kiln of claim 7 in which the insulating lining thickness is between 1.5 in. and 4 in.

9. The kiln of claim 8 wherein the insulating brick outside chord measurement is between 2 in. and 4 in.
10. The kiln of claim 9 where the insulating brick inside chord measurement is between 1 in. and 3.9 in.
- 5 11. The kiln of claim 10 in which the insulating brick length is between 6 in. and 12 in.
12. The kiln of claim 11 wherein the dense work lining includes a plurality of bricks secured to the inner cylindrical surface of the insulating lining in the axial and circumferential directions.
13. The kiln of claim 12 in which the dense bricks are composed of a refractory material.
- 10 14. The kiln of claim 13 wherein the work lining bricks are tapered.
15. The kiln of claim 14 wherein the brick lining thickness is between 6 in. and 10 in.
16. The kiln of claim 15 where the brick outside chord measurement is between 2 in. and 9 in.
17. The kiln of claim 16 in which the dense brick inside chord measurement lies between 1 in. and 8.9 in.
- 15 18. The kiln of claim 17 in which the work brick length is between 6 in. and 12 in.